

Fig. 1

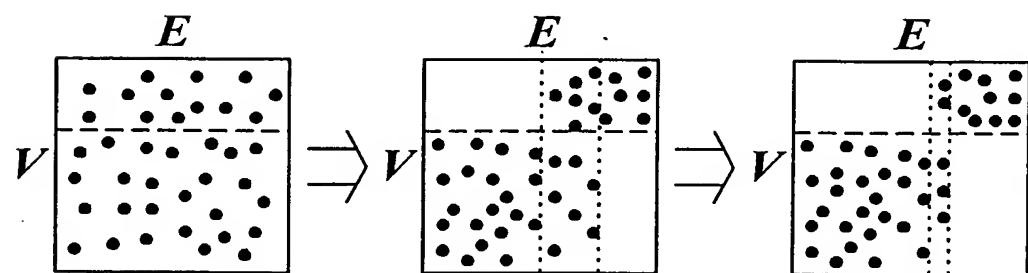


Fig. 2

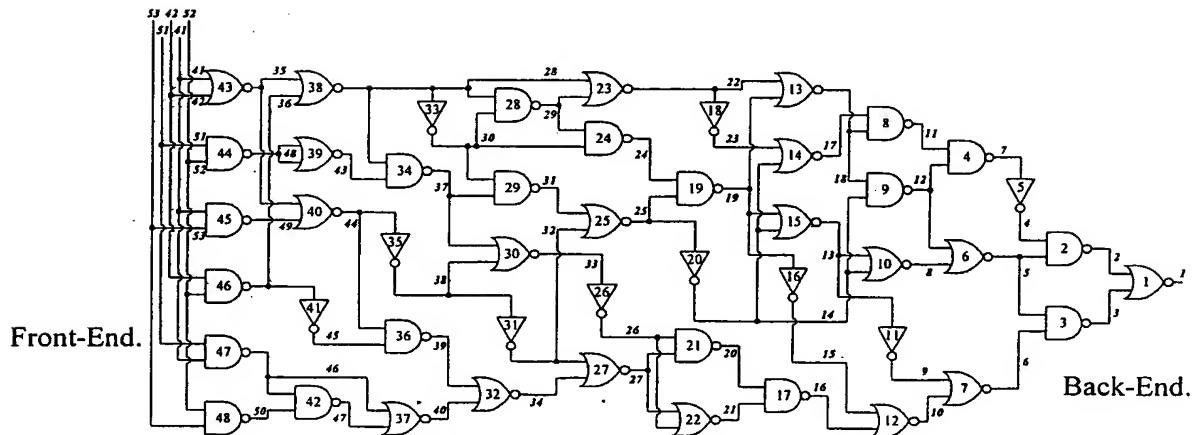


Fig. 3

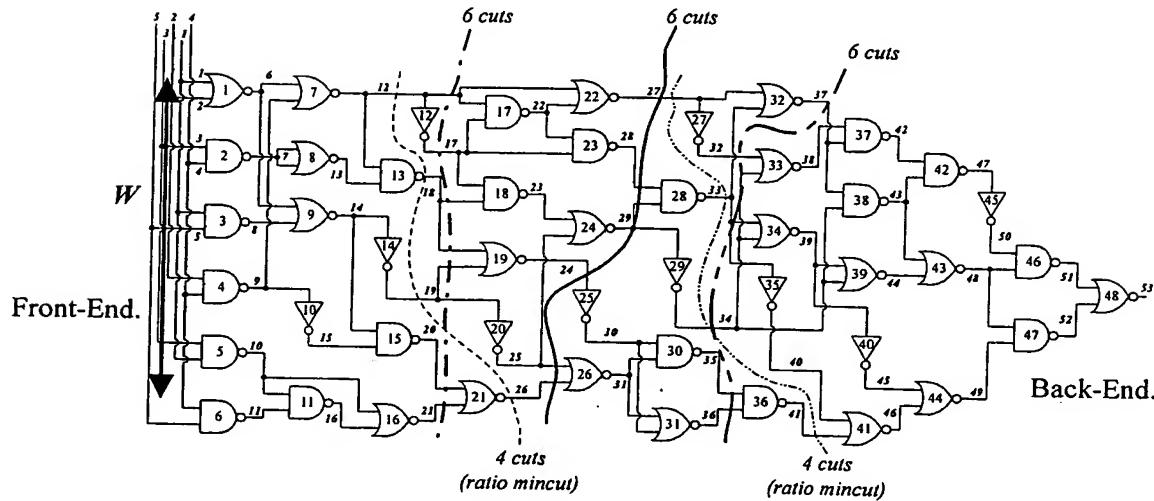


Fig. 4

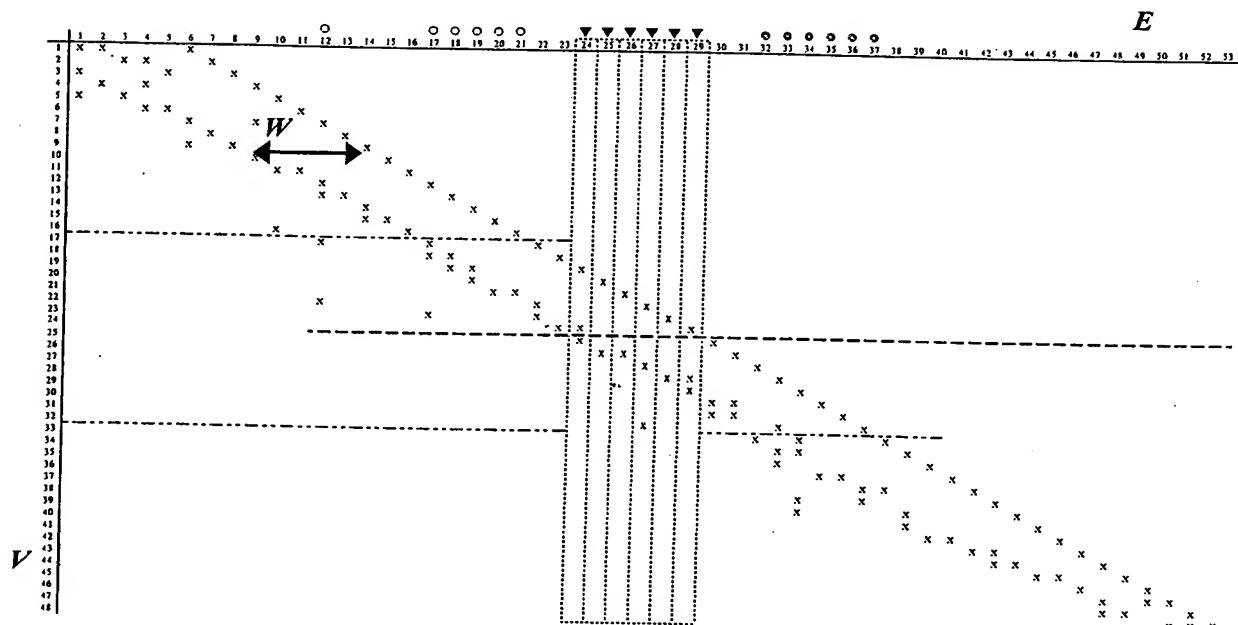


Fig. 5

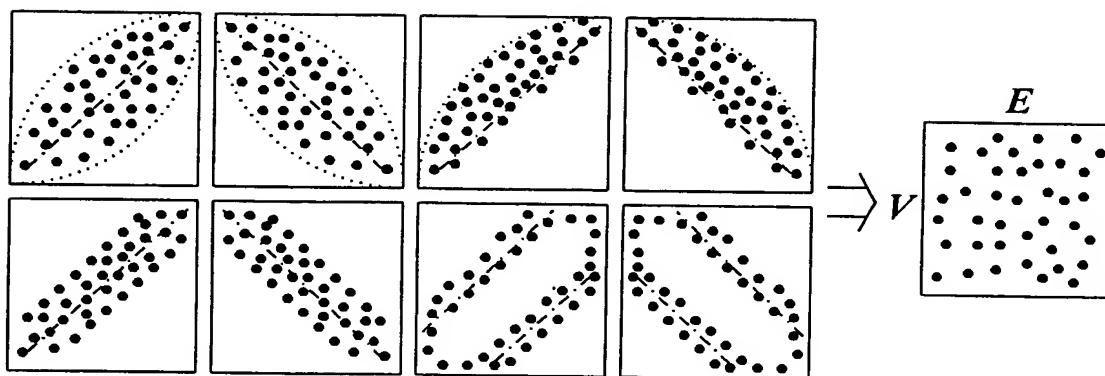


Fig. 6

```
#include <stdlib.h>
#include <stdio.h>
#include <time.h>

#define Required_Num 48
int A[Required_Num], B[Required_Num], C[Required_Num];

int main(void)
{
    int i, j, m, n, seed, non_used;
    time_t t;

    for(i=0; i< Required_Num; i++)
    { A[i] = 0; B[i] = i+1; } /* For initialize */

    seed = (unsigned) time(&t); /* srand((unsigned) time(&t)); */
    srand( seed );

    printf("\nSeed %u, random numbers from 1 to %d\n", seed, Required_Num);
    for(i= Required_Num-1; i>=0; i--)
    {
        int k;
        k = (rand() % Required_Num);
        printf("%2d\t", k+1);
        if( B[k] != 0 ) { A[i] = k+1; B[k] = 0; }
    }
    printf("\nArray A... Non-repeated generated numbers (from back-end):\n");
    for(i=0; i< Required_Num; i++) printf("%2d\t", A[i]);

    printf("\nArray B... Not yet used numbers\n");
    j=0;
    for(i=0; i< Required_Num; i++)
    {
        if(B[i]!=0)
        { C[j]=B[i];
            printf("%2d\t", B[i]);
            j++;
        }
    }
    non_used=j;
    printf("\nInsert Sequence of "
           "Non-yet-used Numbers...\n");
    m=n=0;
    for(i=0; i<Required_Num; i++)
    {
        if(A[i]==0)
        {
            if( (j%2) == 0 )
            {
                A[i] = C[non_used-1-m]; m++;
            }
            else
            {
                A[i] = C[n]; n++;
            }
            printf("%2d\t", A[i]);
            j--;
        }
    }
    printf("\nAfter Modified...\n");
    for(i=0; i< Required_Num; i++)
        printf("%2d\t", A[i]);

    return 0;
}
```

SOME OUTPUT RESULTS:																													
Seed 35988, random numbers from 1 to 48																													
38	45	42	5	31	44	47	4	22	23	9	36	27	7	32	5	12	8	29	11										
6	11	19	6	13	9	41	3	40	9	43	23	32	1	25	26	24	15	32	2	28	47	30	42	17	28	29			
Array A... Non-repeated generated numbers (from back-end):																													
0	28	17	0	30	0	0	2	0	15	24	28	25	1	0	0	43	0	40	3	41	0	13	0	19	0	6	11	29	
8	12	0	32	7	27	36	9	23	22	4	47	44	31	5	42	45	38	Array B... Not yet used numbers											
10	14	16	18	20	21	33	34	35	37	39	46	48	Insert Sequence of Non-yet-used Numbers...																
10	48	14	46	18	39	18	37	20	35	21	34	33	After Modified...																
10	28	17	48	30	14	46	2	16	15	24	28	25	1	39	18	37	43	20	40	3	41	35	13	21	19	34	6	11	29
8	12	33	32	7	27	36	9	23	22	4	47	44	31	5	42	45	38	Array A... Non-repeated generated numbers (from back-end):											
30	28	44	19	37	34	48	34	39	41	0	34	0	19	0	28	30	0	47	1	26	11	5	0	18	23	0	8	7	
37	48	22	43	29	35	13	44	38	31	46	0	4	0	0	6	41	39	0	14	32	0	17	0	40	0	27	15		
32	23	18	27	5	11	26	1	47	44	37	48	22	43	29	35	13	44	2	3	9	10	12	16	20	21	24	25		
30	28	44	19	37	34	48	34	39	41	33	36	42	45	Insert Sequence of Non-yet-used Numbers...															
37	48	22	43	29	35	13	44	45	2	42	3	36	8	33	10	25	12	45	2	34	42	19	3	28	30	36	47		
38	31	46	16	4	21	20	6	41	39	10	14	32	25	17	12	40	24	27	15	37	48	22	43	29	35	13	44	0	

Fig. 7

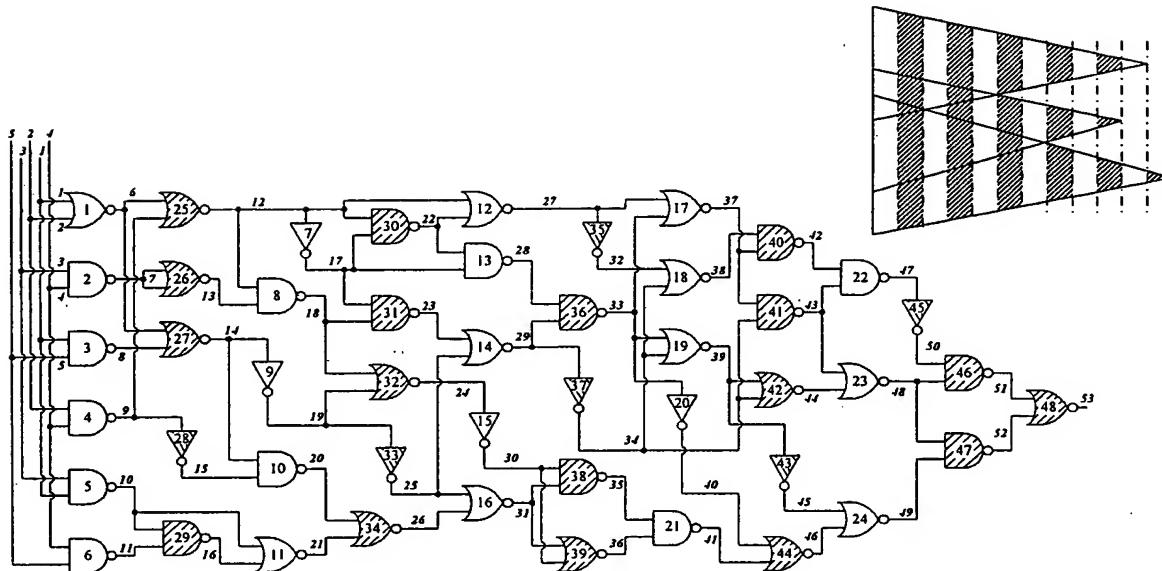


Fig. 8A

Seed 34731, random numbers from 1 to 24												Seed 34797, random numbers from 25 to 48																								
1	10	21	8	17	6	4	7	22	21	15	9	41	28	40	33	45	36	48	44	46	39	33	47													
9	9	12	13	12	19	6	4	10	21	11	23	0	35	37	30	31	44	33	46	25	35	28	30	46												
23	11	4	24	10	1	15	22	7	4	6	17	1	0	0	0	25	46	0	0	31	30	0	37	35	47											
8	21	10	1	24	11	16	18	20	17	16	15	13	12	14	1	9	15	22	7	4	6	17	26	43	29											
Array A... Non-repeated generated numbers (from back-end)												Array A... Non-repeated generated numbers (from back-end)																								
24	0	11	23	0	0	0	0	19	0	13	12	0	9	15	22	7	4	6	17	8	21	10	1	26	43	29										
13	12	0	9	15	22	7	4	6	17	8	21	10	1	24	11	16	18	20	17	16	15	13	12	14	1	37	35	47								
Array B... Not yet used numbers												Array B... Not yet used numbers												26	29	32	34	38	42	43						
2	3	5	14	16	18	20	2	20	3	18	5	16	14	26	43	29	42	32	38	34	26	43	29	42	32	38	34	37	35	47	26	43	29			
Insert Sequence of Non-yet-used Numbers...												After Modified...												26	43	29	42	25	46	32	38	31	30			
2	20	3	18	5	16	14	8	21	10	1	24	2	11	23	20	3	18	5	19	16	13	12	14	9	15	22	7	4	6	17	37	35	47	26	43	29
After Modified...												After Modified...												26	43	29	42	25	46	32	38	31	30			
24	2	11	23	20	3	18	5	19	16	13	12	14	9	15	22	7	4	6	17	8	21	10	1	24	2	11	23	20	3	18	5	19	16	13	12	14

Fig. 8B

0. Initialize: mapping (V, E) pairs to V-E plain,
 confirm the (V, E) pair distributed condition under nearly Max-cut reservation
 and may randomize the node number order.

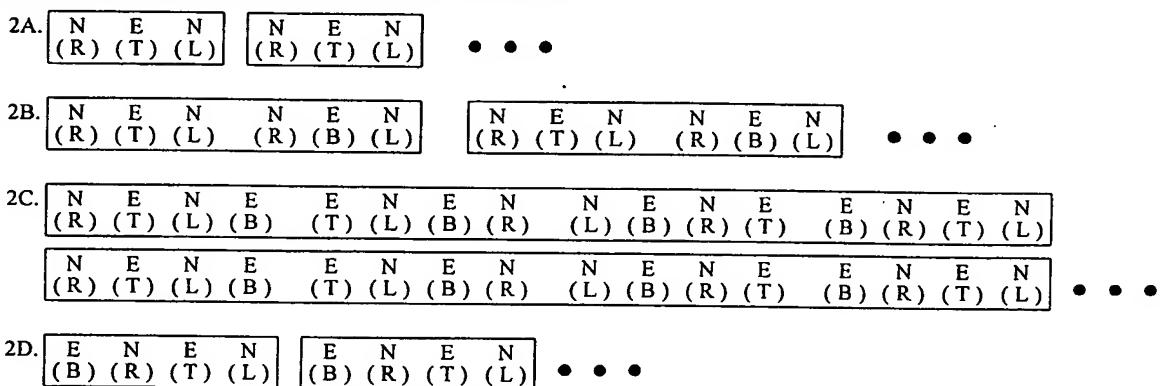
1. Phase One: basic four steps:

$\begin{matrix} E & N & E & N \\ (B) & (R) & (T) & (L) \end{matrix}$

E: Edge Radix Sort
 N: Node Radix Sort

(B) : Bottom-side base
 (R) : Right-side base
 (T) : Top-side base
 (L) : Left-side base

2. Phase Two Begins: different additional steps can be choiced.

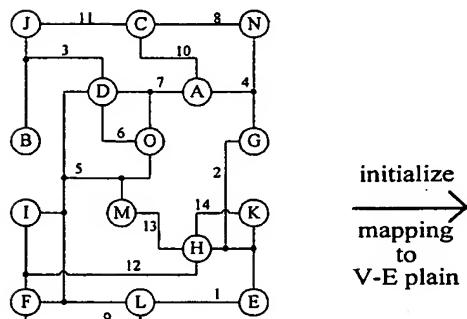


2E. Some other recurring orders.

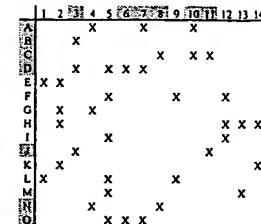
2F. Some other clustering techniques.

※When every sort step completed, record nodes set, and if node set no more change, halt the procedures.

Fig. 9



A 14 edges / 15 nodes example.



Confirm the distributed condition.

Fig. 10A

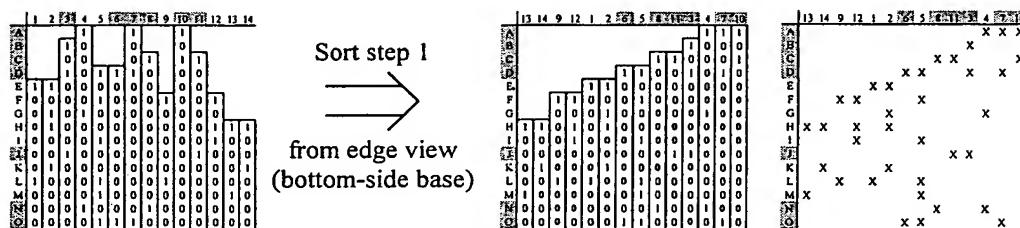


Fig. 10B

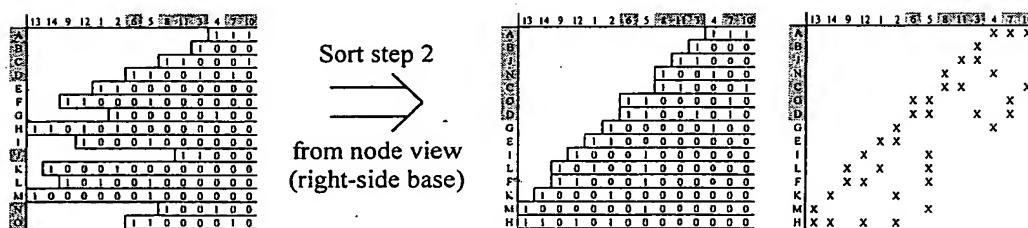


Fig. 10C

13	2	9	12	1	2	5	8	13	4	7	10
A	0	0	0	0	0	0	0	0	1	1	0
B	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0	0	0	0
J	0	0	0	0	0	0	0	0	0	0	0
K	0	0	0	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0	0	0	0
M	0	0	0	0	0	0	0	0	0	0	0
N	0	0	0	0	0	0	0	0	0	0	0

Sort step 3
 from edge view
 (top-side base)

13	2	9	12	1	2	5	8	13	4	7	10
A	0	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0	0	0	0
J	0	0	0	0	0	0	0	0	0	0	0
K	0	0	0	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0	0	0	0
M	0	0	0	0	0	0	0	0	0	0	0
N	0	0	0	0	0	0	0	0	0	0	0

O
 O

Fig. 10D

13	2	14	12	5	9	1	4	7	10
A	0	0	0	0	0	1	0	0	0
B	0	0	0	0	0	0	0	1	0
C	0	0	0	0	0	0	0	0	1
D	0	0	0	0	0	0	0	0	1
E	0	0	0	0	0	0	0	0	1
F	0	0	0	0	0	0	0	0	1
G	0	0	0	0	0	0	0	0	1
H	0	0	0	0	0	0	0	0	1
I	0	0	0	0	0	0	0	0	1
J	0	0	0	0	0	0	0	0	1
K	0	0	0	0	0	0	0	0	1
L	0	0	0	0	0	0	0	0	1
M	0	0	0	0	0	0	0	0	1
N	0	0	0	0	0	0	0	0	1

Sort step 4
 from edge view
 (left-side base)

13	2	14	12	5	9	1	4	7	10
A	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0	0
J	0	0	0	0	0	0	0	0	0
K	0	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0	0
M	0	0	0	0	0	0	0	0	0
N	0	0	0	0	0	0	0	0	0

O
 O

Fig. 10E

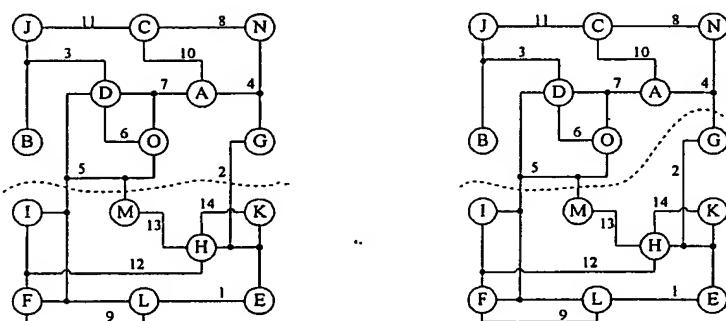
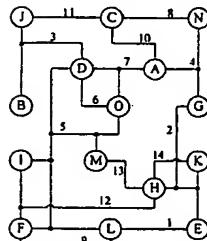
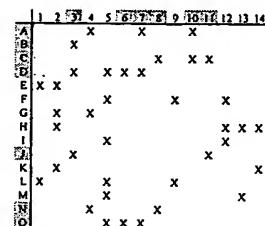


Fig. 10F



A 14 edges / 15 nodes example.

initialize
mapping
to
V-E plain



Confirm the distributed condition.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	0	1	0	0	0	0	0	0	0	0	0	0	0	0
B	0	0	1	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	1	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	1	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	1	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	1	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	1	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	1	0	0	0	0	0
I	0	0	0	0	0	0	0	0	0	1	0	0	0	0
J	0	0	0	0	0	0	0	0	0	0	1	0	0	0
K	0	0	0	0	0	0	0	0	0	0	0	1	0	0
L	0	0	0	0	0	0	0	0	0	0	0	0	1	0
M	0	0	0	0	0	0	0	0	0	0	0	0	0	1
N	0	0	0	0	0	0	0	0	0	0	0	0	0	1
O	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Sort step 1
from edge view
(bottom-side base)

	13	14	9	12	1	2	5	6	7	8	10	11	13	14
A	x	x	x	x	x	x	x	x	x	x	x	x	x	x
B	x	x	x	x	x	x	x	x	x	x	x	x	x	x
C	x	x	x	x	x	x	x	x	x	x	x	x	x	x
D	x	x	x	x	x	x	x	x	x	x	x	x	x	x
E	x	x	x	x	x	x	x	x	x	x	x	x	x	x
F	x	x	x	x	x	x	x	x	x	x	x	x	x	x
G	x	x	x	x	x	x	x	x	x	x	x	x	x	x
H	x	x	x	x	x	x	x	x	x	x	x	x	x	x
I	x	x	x	x	x	x	x	x	x	x	x	x	x	x
J	x	x	x	x	x	x	x	x	x	x	x	x	x	x
K	x	x	x	x	x	x	x	x	x	x	x	x	x	x
L	x	x	x	x	x	x	x	x	x	x	x	x	x	x
M	x	x	x	x	x	x	x	x	x	x	x	x	x	x
N	x	x	x	x	x	x	x	x	x	x	x	x	x	x
O	x	x	x	x	x	x	x	x	x	x	x	x	x	x
P	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Sort step 2
from node view
(right-side base)

	13	14	9	12	1	2	5	6	7	8	10	11	13	14
A	x	x	x	x	x	x	x	x	x	x	x	x	x	x
B	x	x	x	x	x	x	x	x	x	x	x	x	x	x
C	x	x	x	x	x	x	x	x	x	x	x	x	x	x
D	x	x	x	x	x	x	x	x	x	x	x	x	x	x
E	x	x	x	x	x	x	x	x	x	x	x	x	x	x
F	x	x	x	x	x	x	x	x	x	x	x	x	x	x
G	x	x	x	x	x	x	x	x	x	x	x	x	x	x
H	x	x	x	x	x	x	x	x	x	x	x	x	x	x
I	x	x	x	x	x	x	x	x	x	x	x	x	x	x
J	x	x	x	x	x	x	x	x	x	x	x	x	x	x
K	x	x	x	x	x	x	x	x	x	x	x	x	x	x
L	x	x	x	x	x	x	x	x	x	x	x	x	x	x
M	x	x	x	x	x	x	x	x	x	x	x	x	x	x
N	x	x	x	x	x	x	x	x	x	x	x	x	x	x
O	x	x	x	x	x	x	x	x	x	x	x	x	x	x
P	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Sort step 3
from edge view
(top-side base)

	13	14	9	12	1	2	5	6	7	8	10	11	13	14
A	x	x	x	x	x	x	x	x	x	x	x	x	x	x
B	x	x	x	x	x	x	x	x	x	x	x	x	x	x
C	x	x	x	x	x	x	x	x	x	x	x	x	x	x
D	x	x	x	x	x	x	x	x	x	x	x	x	x	x
E	x	x	x	x	x	x	x	x	x	x	x	x	x	x
F	x	x	x	x	x	x	x	x	x	x	x	x	x	x
G	x	x	x	x	x	x	x	x	x	x	x	x	x	x
H	x	x	x	x	x	x	x	x	x	x	x	x	x	x
I	x	x	x	x	x	x	x	x	x	x	x	x	x	x
J	x	x	x	x	x	x	x	x	x	x	x	x	x	x
K	x	x	x	x	x	x	x	x	x	x	x	x	x	x
L	x	x	x	x	x	x	x	x	x	x	x	x	x	x
M	x	x	x	x	x	x	x	x	x	x	x	x	x	x
N	x	x	x	x	x	x	x	x	x	x	x	x	x	x
O	x	x	x	x	x	x	x	x	x	x	x	x	x	x
P	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Sort step 4
from edge view
(left-side base)

	13	14	9	12	1	2	5	6	7	8	10	11	13	14
A	x	x	x	x	x	x	x	x	x	x	x	x	x	x
B	x	x	x	x	x	x	x	x	x	x	x	x	x	x
C	x	x	x	x	x	x	x	x	x	x	x	x	x	x
D	x	x	x	x	x	x	x	x	x	x	x	x	x	x
E	x	x	x	x	x	x	x	x	x	x	x	x	x	x
F	x	x	x	x	x	x	x	x	x	x	x	x	x	x
G	x	x	x	x	x	x	x	x	x	x	x	x	x	x
H	x	x	x	x	x	x	x	x	x	x	x	x	x	x
I	x	x	x	x	x	x	x	x	x	x	x	x	x	x
J	x	x	x	x	x	x	x	x	x	x	x	x	x	x
K	x	x	x	x	x	x	x	x	x	x	x	x	x	x
L	x	x	x	x	x	x	x	x	x	x	x	x	x	x
M	x	x	x	x	x	x	x	x	x	x	x	x	x	x
N	x	x	x	x	x	x	x	x	x	x	x	x	x	x
O	x	x	x	x	x	x	x	x	x	x	x	x	x	x
P	x	x	x	x	x	x	x	x	x	x	x	x	x	x

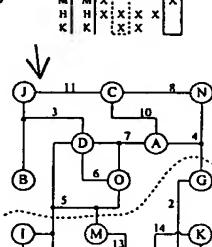
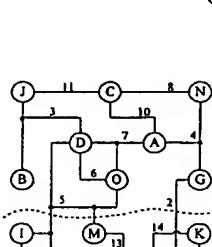


Fig. 11

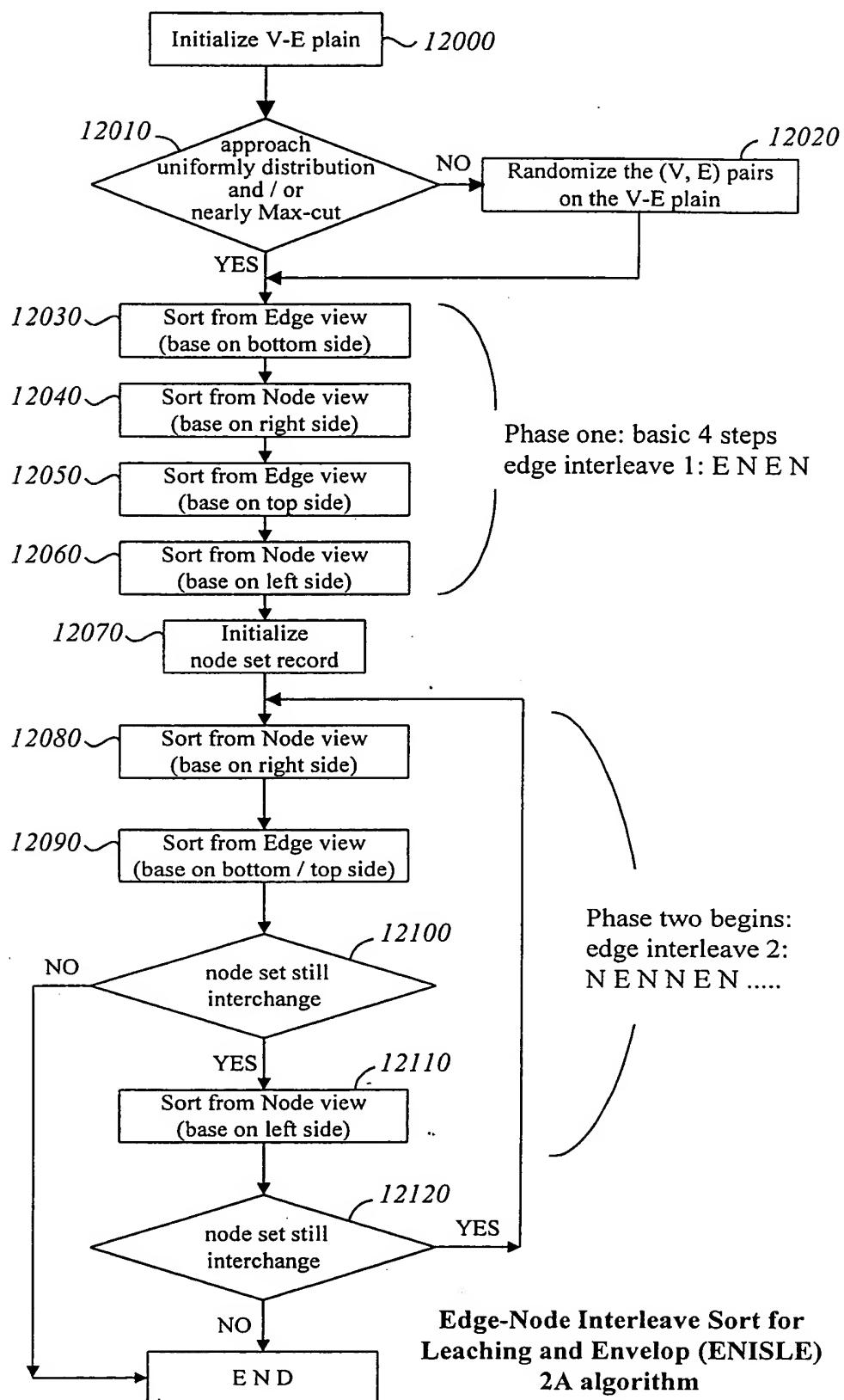


Fig. 12

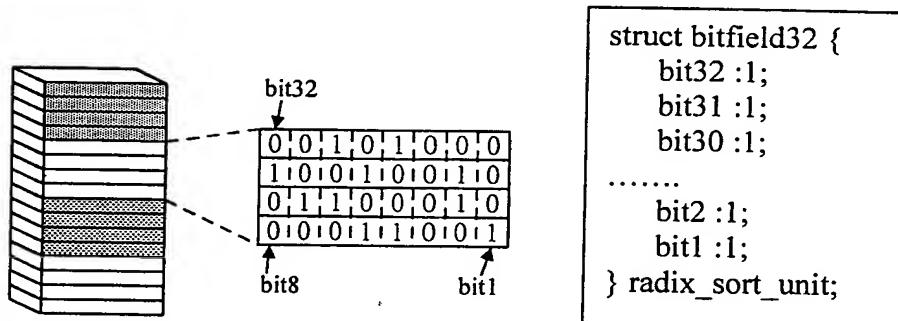


Fig. 13

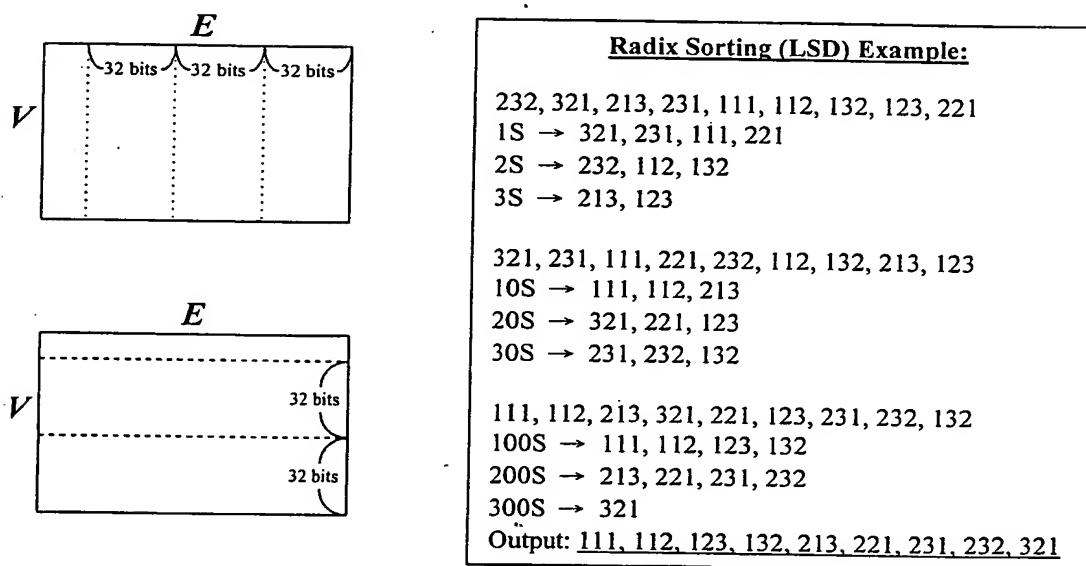
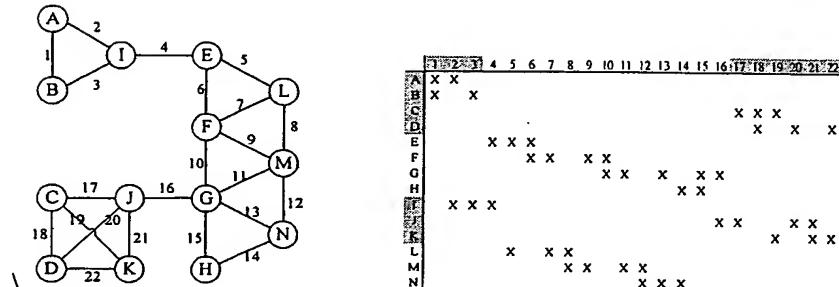
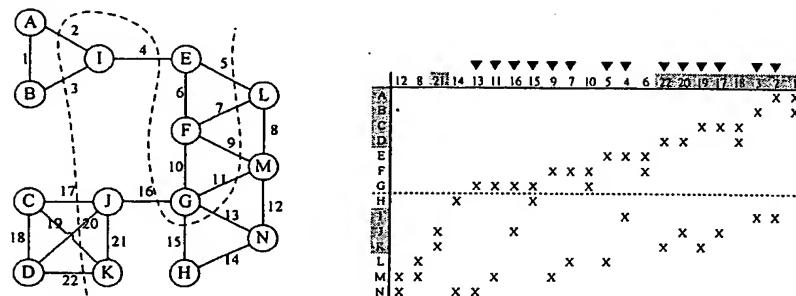


Fig. 14



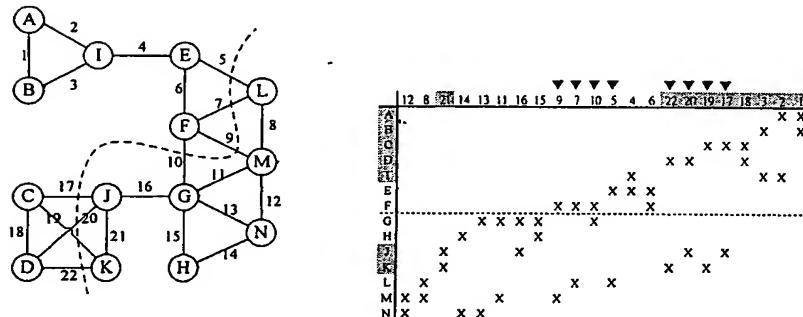
Initialize the V-E Plain.

Fig. 15A



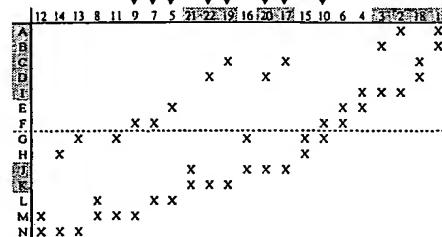
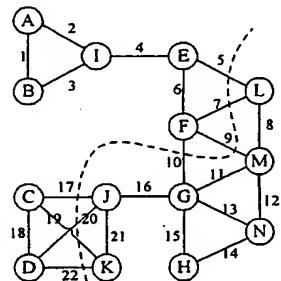
Step 1, cut numbers: 14.

Fig. 15B



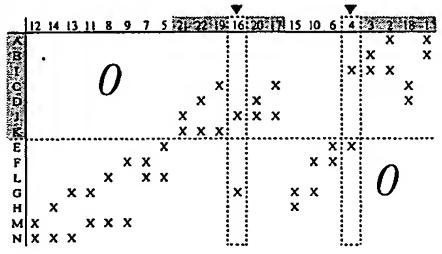
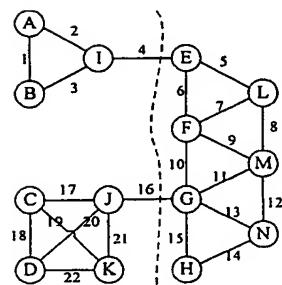
Step 2, cut numbers: 8.

Fig. 15C



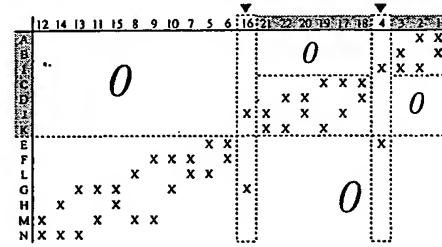
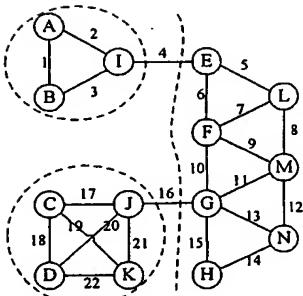
Step 3, 4, cut numbers: 8.

Fig. 15D



Step 5, cut numbers: 2.

Fig. 15E



Step 6, cut numbers: 2.

Fig. 15F

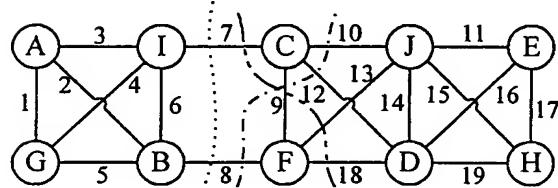


Fig. 16

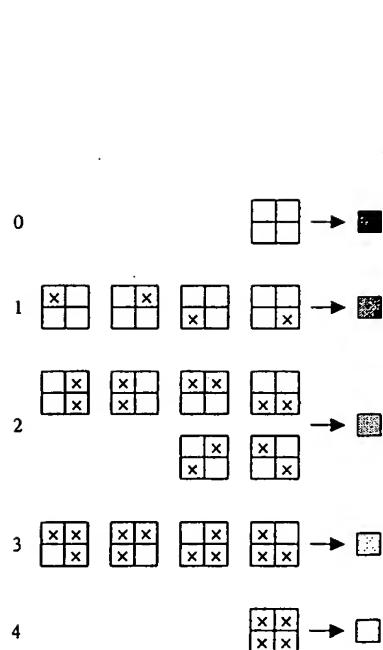


Fig. 17A

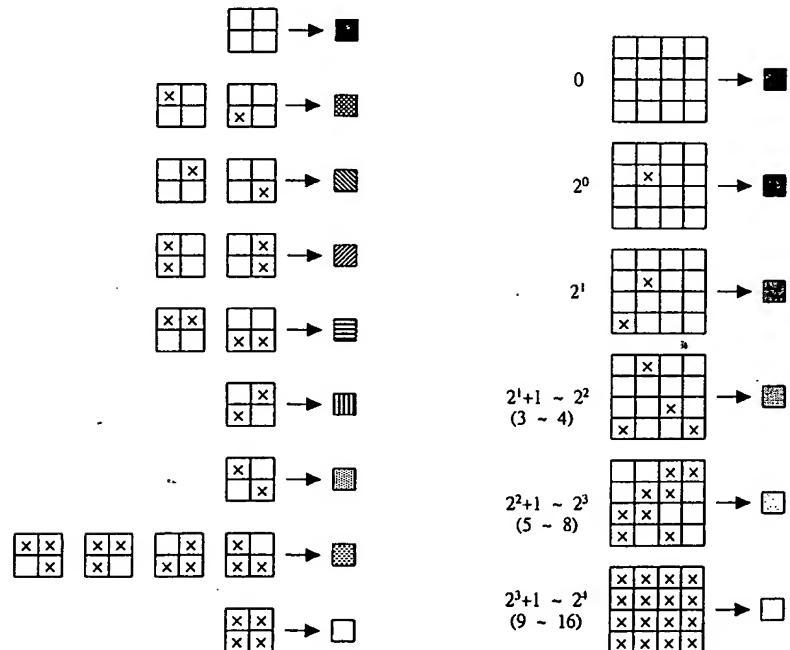


Fig. 17B

Fig. 17C

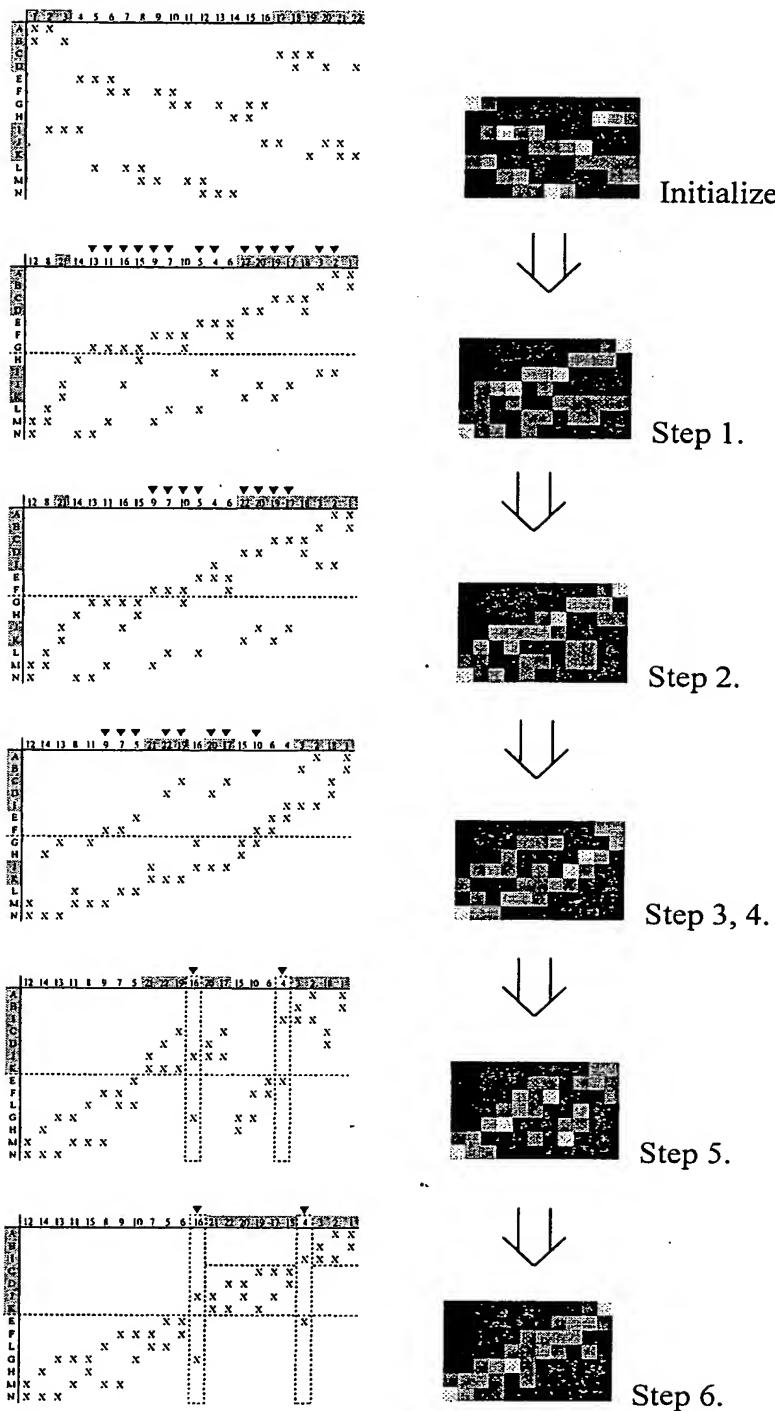


Fig. 18.

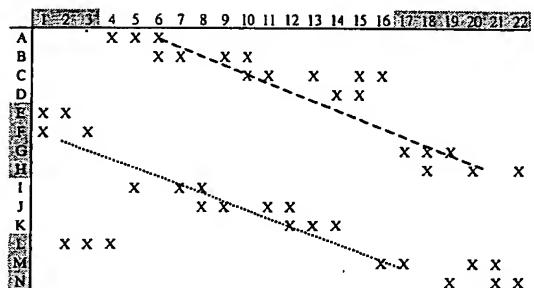
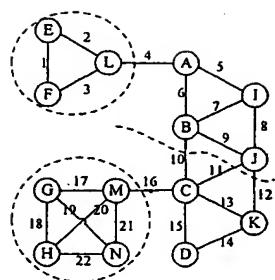


Fig. 19

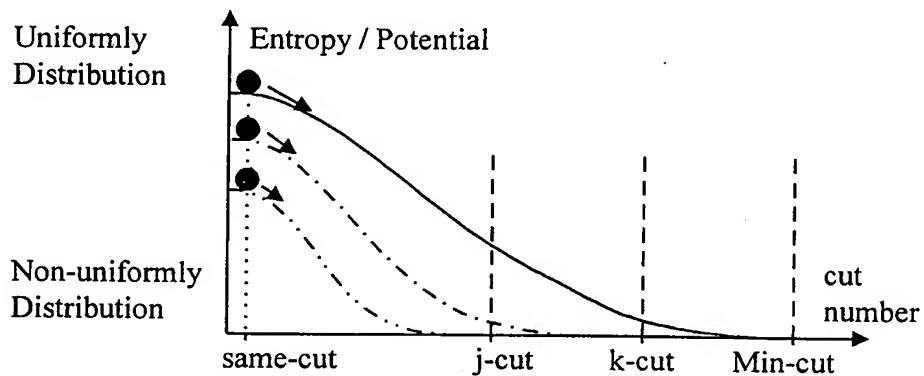


Fig. 20A

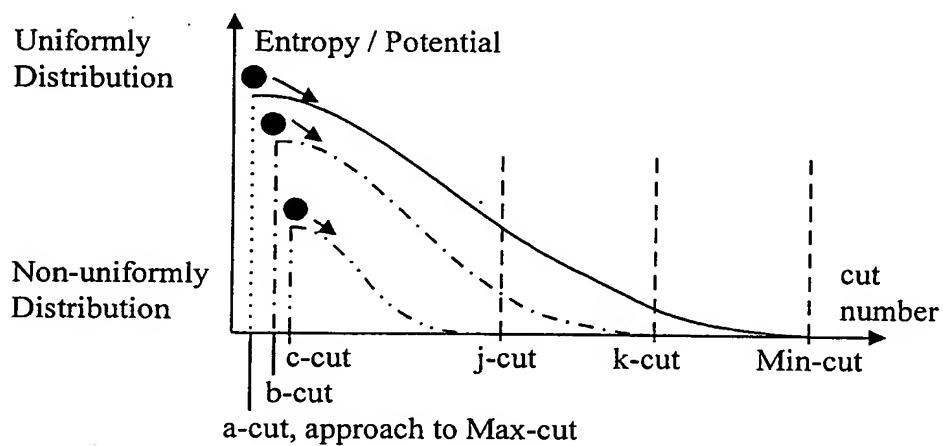


Fig. 20B

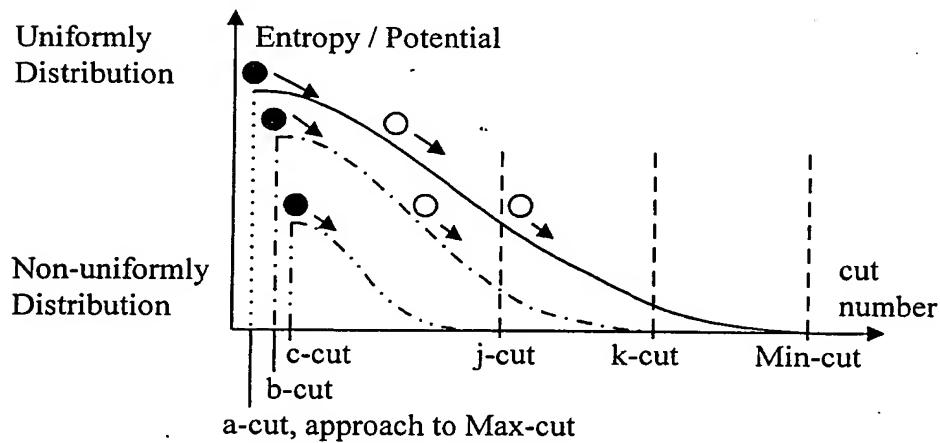


Fig. 20C